



# City Tree Inventory Quick Facts

for

Springfield, Missouri

City of Springfield  
Public Works Operations  
Public Grounds

May 2001

# ACKNOWLEDGEMENTS

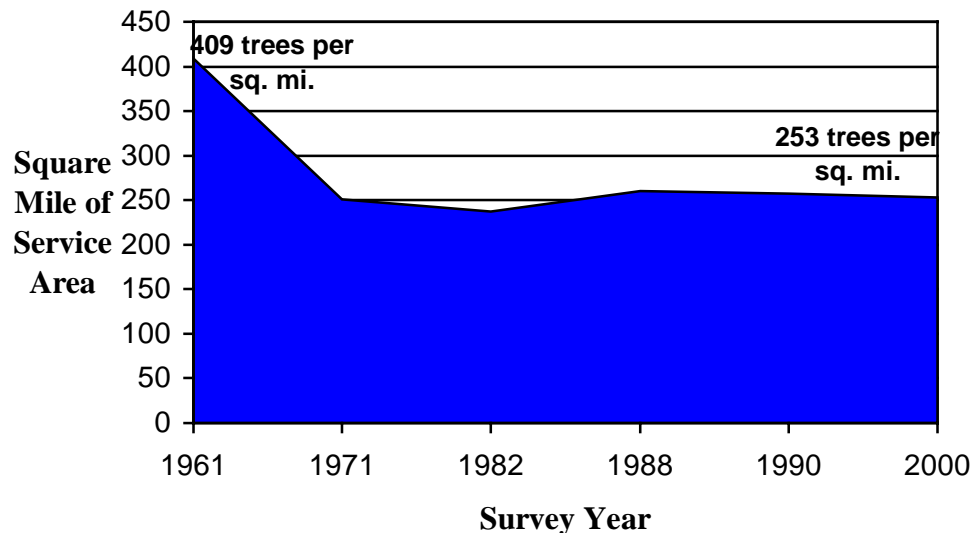
The City of Springfield would like to thank the Missouri Department of Conservation for its continued support of this project through the Tree Resource Improvement and Maintenance (T.R.I.M.) cost-share grant program. The purpose of T.R.I.M. program is to provide financial assistance to units of government (municipal, county, or state) and schools for the management, improvement, or conservation of the urban and community forest. The goals of the T.R.I.M. program are as follows:

- Encourage proper care of the urban forest resource.
- Provide "seed" money to local units of government for the establishment or extension of comprehensive community forestry programs.
- Improve a community's capacity to manage its trees.
- Enhance community forest management activities by offering communities non-tree planting cost-share assistance.

Total City Trees	Quantity	Percentage of Total Existing City Trees
Existing	15,019	8%
Estimated Planting Spaces <sup>1</sup>	165,209	92%
Total Potential City Trees	180,228	

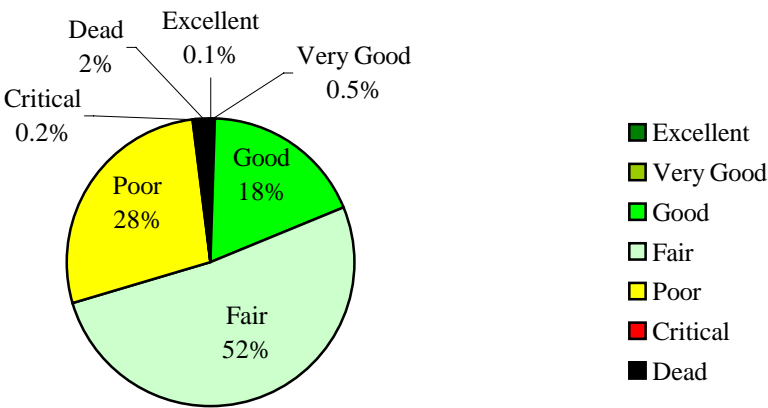
There are approximately 900 centerline miles of streets within the City. Based on a goal of 211 street tree plantings for every mile of street (one tree on both sides per 50 feet of street), there are an estimated 190,000 available public tree-planting spaces within Springfield. This equates to eleven potential tree plantings for every existing city tree. Similar estimates were found a little over ten years ago in a citywide study conducted by the Missouri Department of Conservation.

## Street Trees Per City Service Area



The 38 square mile study conducted in 2000, revealed a net loss of over 5,900 trees since 1961 including tree replanting and those gained through added property. This is a 38% loss reduction equaling 152 trees each year over the past 40 years, or a loss of 156 trees per square mile. This 2000 study area very closely resembled the corporate city limits that existed in 1961.

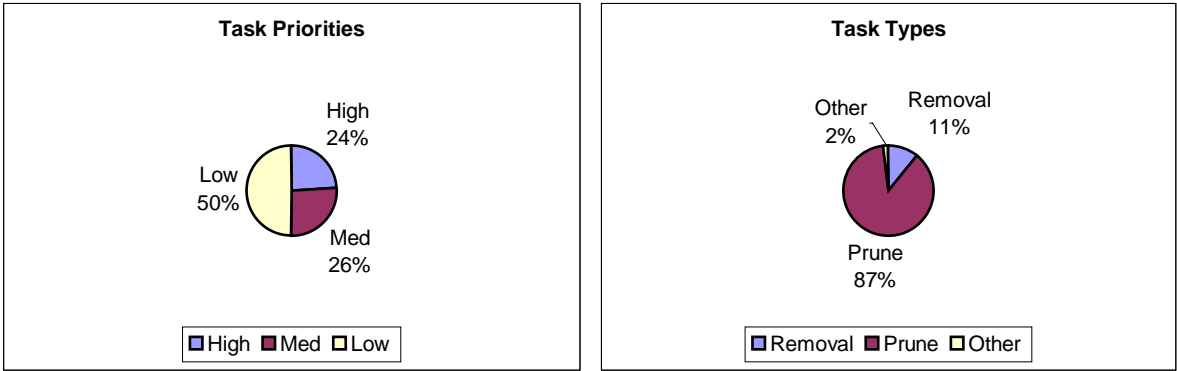
# City Tree Conditions



Condition Rating	Quantity
Excellent	21
Very Good	70
Good	2,724
Fair	7,721
Poor	4,177
Critical	30
Dead	268

70% percent of the City’s trees are in fair to good condition meaning that the majority of city trees are in relatively good health. Notable, however, is that one-quarter of the City’s trees were found to be in poor condition. Taking the poor condition trees into account with the half in fair condition, nearly 12,000 of the City’s trees are in need of corrective work to improve their status.

# Tree Maintenance



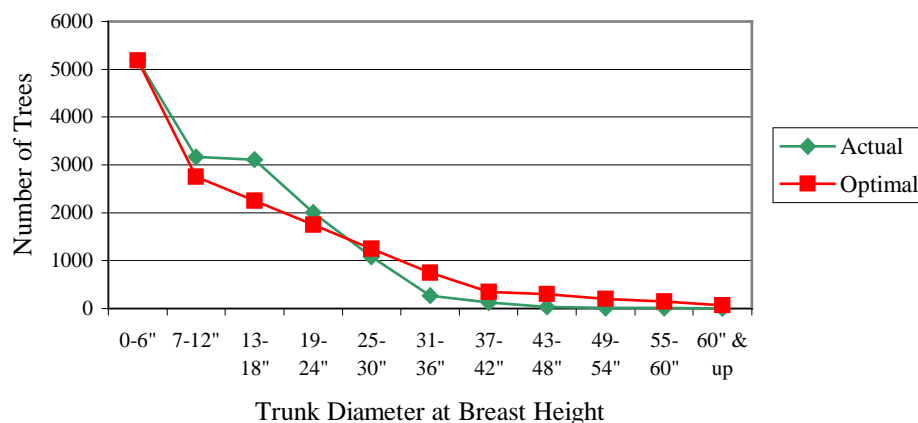
Over 100,000 man-hours of work has been identified for the 15,000 city trees included in the tree inventory study (about 6 hours of work per tree), of which 24,480 hours is of a high priority type. With the current available City resources, the total work will take an estimated 17 years to complete.

1,449 of the City's trees were found to be in poor to critical condition. These trees require special attention as follows:

<u>Tree Removals/Monitoring</u>	<u>Quantity</u>	<u>Percentage of Total Existing City Trees</u>
Priority One (requires removal)	281	1.9%
Priority Two (bi-annual monitoring)	575	3.8%
Priority Three (annual monitoring)	593	4.0%

Of the City's 15,000 trees, 281 are either dead, significantly diseased and/or pose a danger. These trees have been classified as "Priority One" in terms of work ranking and will require removal. There are 1,168 additional city trees in lesser stages of decline than those classified as "Priority One" trees and will be considered for a special monitoring program in lieu of removal.

## Tree Size Distribution

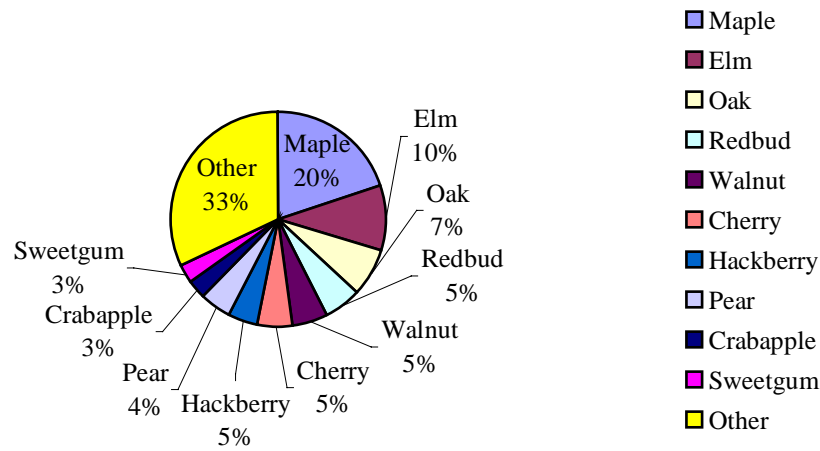


The current profile of tree size distribution shows a healthy mix of tree generations. A rough (very rough) estimate of a tree's age can be derived from its trunk size. In terms of the existing distribution, we have a fair number of young trees, an overabundance of middle-aged trees and a significant shortage of mature trees. A carefully planned and implemented tree- maintenance and planting program should be aimed at achieving optimal distribution.

### Tree Sizes

Tallest	100' Tall (Tulip Poplar - 900 S Weller)
Largest Canopy	81' Wide (Elm - 1700 S Benton)
Largest Trunk Diameter	63" Diameter at Breast Height (Oak - 2100 S Kings, 3500 E Cherry)
Average Trunk Size/Age	12" Diameter at Breast Height/30 Years Old

# Diversity of City Tree Types



Top Ten Tree Species	Quantity
Maple	3,014
Elm	1,449
Oak	1,076
Redbud	817
Walnut	817
Cherry	782
Hackberry	690
Pear	674
Crabapple	428
Sweetgum	419
Other	4,836

A guideline called the Santamour Rule<sup>1</sup> has been developed to provide communities a gauge for determining whether good diversity is being demonstrated in its tree population. In comparing the Santamour Rule against the findings of the study, the City's trees have good diversity. Over 70 different kinds (genus) of trees were identified in the study. The maple genus population is identified as being at the maximum level. Within the maple genus population, Silver Maples represent 6% of the total city tree population thus keeping it within the recommended species level of 10%. The number of maples as part of the overall city tree population indicates that future plantings of maples should be closely monitored to allow other types of trees to catch up.

<sup>1</sup> This rule was developed by Dr. Frank Santamour as a means of encouraging diversity within a given tree population in order to avoid a monoculture from developing. The Dutch Elm Disease epidemic that struck the prolifically planted American Elm during the middle part of last century is the lesson learned from allowing such monocultures to occur. The basis of the rule is as follows:

- Single Tree Species – maximum 10% abundance
- One Tree Genus – maximum 20% abundance
- Single Tree Family – maximum of 30% abundance

# SUMMARY

Here are some facts<sup>2</sup> regarding some of the many benefits our city trees provide:

## Energy Savings

- According to an article in the 1980 U.S. Department of Agriculture Yearbook, appropriately placed trees and shrubs can reduce heating costs as much as 15% and cooling costs up to 50%.
- During the peak summer demand period, trees in Sacramento, California reduce energy demand 6.1% daily. Over the course of a year they reduce energy use 11.6%, a savings of \$18.5 million.
- Trees in Houston, Texas reduce air conditioning use enough to save residents \$26 million a year in electricity costs, approximately \$72 for an average home. (Houston Chronicle, Dec. 14, 2000).

## Increased Property Values

- Trees add up to 20% to the real estate value of property. In a study in the town of Greece, New York the average selling price of houses with "no tree cover" was 15% lower than the average selling price of houses with "good tree cover" (\$51,108 vs. \$60,614).
- In a Virginia tax court case it was decided that the loss of a century-old black oak on a property valued at \$164,500 reduced its value by \$15,000 (9.1%).
- The International Society of Arboriculture's Guide for Plant Appraisal (Eighth Edition) show that a Marshall ash with a 20-inch diameter could have an appraised value of \$4,500 and a northern red oak with a 35-inch diameter in an open location could have an appraised value of \$18,000.

## Sustaining the Environment

- Trees intercept particulate air pollutants and their foliage absorbs sulfur dioxide and ozone, two very damaging air pollutants.
- Trees reduce runoff and the risk of flooding by capturing rainfall on their leaves and branches, and tree roots reduce soil erosion.
- Each year trees in Sacramento, California are responsible for a net removal of 334,400 tons of carbon dioxide and 148 tons of nitrogen oxides. Reduced air temperatures by trees also slow the formation of ozone in the region. Annual benefits from trees in Sacramento total \$50.5 million.
- Houston's urban forest decreased significantly between 1972 and 1999, depriving the area of \$55 million annually in benefits such as reduced air pollution and enhanced flood control. (Houston Chronicle, Dec. 14, 2000).

## Quality of Life

- University of Illinois researchers Frances Kuo and Bill Sullivan have found that people living in public housing complexes with trees and grass reported significantly better relationships with their neighbors, a stronger sense of community, and fewer incidences of violence than those living in complexes without trees. The researchers [Kuo and Sullivan] state, "Trees have the potential to reduce social service budgets, decrease police calls for domestic violence, strengthen urban communities, and decrease the incidence of child abuse."
- Trees absorb up to 90% of UV radiation, acting as natural sunscreen (equivalent to 10 to 20 SPF). Adequate tree cover can reduce the number of skin cancer cases and health costs, according to the California Department of Health Services.

To put some of the more functional benefits trees provide into a quantitative value<sup>3</sup>, the City's 15,000 trees are saving our community an estimated \$4,095,000 in costs that would otherwise be incurred without the work these trees perform to improve our environment. The aesthetic value that our city trees contribute to increase our property values is estimated to be an even higher value. Building upon this significant community asset would appear to be an excellent investment.

To learn more about city tree planting and maintenance programs, please call 864-1136.

<sup>2</sup>Illinois Power Customers "United to Save Our Trees" (<http://www.saveiltrees.org/>)

<sup>3</sup>According to Gary Moll and Stanley Young in the book *Growing Greener Cities*, in one year a tree provides \$273 in tangible benefits such as air conditioning, erosion control, wildlife benefits, and heating costs. Over a 50 year period, that same tree provides \$57,101 worth of benefits.